

BLOOD CHOLESTEROL AND BLOOD GLUCOSE **MEASUREMENT** **CODE OF BEST PRACTICE**

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INTRODUCTION

Blood Cholesterol and Blood Glucose Measurement

Blood cholesterol measurement can provide a valuable mechanism to detect individuals in a community with increased blood cholesterol. High blood cholesterol can be a risk factor for heart and blood vessel disease. By measuring blood cholesterol levels it can help patients to monitor the effects of maintaining a cholesterol lowering diet and participating in regular exercise.

Blood glucose testing can provide a valuable mechanism for detecting undiagnosed diabetes, or it can be used as a mechanism to control diabetes or other abnormal glucose related conditions. A doctor should be consulted to manage high or low levels of blood glucose. Some medications can also affect blood glucose results. Should diabetes continue to be undiagnosed in an individual, it can result in significant health complications.

Blood cholesterol and blood glucose testing is a skin penetration procedure specified in section 51 of the Public Health Act 1991 and therefore must comply with the requirements of the Public Health (Skin Penetration) Regulation, 2000. Compliance with the NSW Health Guidelines on Blood Cholesterol and Blood Glucose Measurement will provide a defence in prosecution under the Regulation.

Preventing Disease Transmission

Skin that is intact, without cuts, abrasions or lesions, is a natural protective barrier against infection. Penetrating the skin can introduce infective micro-organisms into the body. Infection can occur if equipment that pierces, punctures or penetrates the skin is contaminated, or can occur from direct blood to blood contact or other body substances. The use of infection control techniques for blood cholesterol and blood glucose measurement procedures minimises the introduction of infective micro-organisms into the body.

Unhygienic practices and procedures may affect the health of both the client and the operator. Where procedures involving skin penetration are not managed correctly, they have the potential to transmit bacterial and fungal infections, as well as viral infections such as HIV, hepatitis B and hepatitis C.

Skin infections can also occur without breaking the skin. For this reason all equipment must be cleaned between each client to eliminate the potential to spread infection. Equipment used in a procedure that does not penetrate the skin, but comes in contact with the skin can spread staphylococcal, streptococcal and pseudomonal infections, all of which are bacterial infections. Other types of skin infections can include herpes (a viral infection), ringworm or tinea (fungal infections), scabies (a form of mite infection).

Micro-organisms are everywhere; they live on skin, in food and dirt. They are easily spread between clients and operators and are easily transferred by contact with unwashed hands, soiled equipment, or contact with blood and body substances.

Micro-organisms can be present even after cleaning has removed all visible soil and stains. Cleaning can reduce the numbers of micro-organisms, however an invisible trace of blood on equipment that penetrates the skin can spread diseases such as HIV, hepatitis B and hepatitis C.

Operators must assume that all blood and other body substances are potential sources of infection. To prevent the transfer of micro-organisms, operators must perform procedures in a safe and hygienic manner that include the use of standard infection control procedures, maintaining a clean premises, appropriate reprocessing of equipment and safe work practices.

Why Have a Code of Best Practice ?

The use of this Code by blood cholesterol and blood glucose operators will help to reduce the transmission of blood borne and other infectious diseases to clients and operators. Specific infection control techniques and procedures are outlined in this document. By using these techniques it will minimise the potential to spread disease.

The 'Guidelines on Blood Cholesterol and Blood Glucose Measurement', is another NSW Health publication. It provides information on:

- the minimum legislative requirements for blood cholesterol and blood glucose measurement premises, and
- the minimum legislative requirements for operators conducting blood cholesterol and blood glucose measurement procedures and their responsibilities.

This document provides additional information on :

- the minimum hygiene requirements for blood cholesterol and blood glucose measurement procedures, and
- best practice options.

and should be read in conjunction with the 'Guidelines on Blood Cholesterol and Blood Glucose Measurement'.

If you would like copies of the Public Health (Skin Penetration) Regulation 2000 and the Guidelines on Blood Cholesterol and Blood Glucose Measurement they can be downloaded from the NSW Health web site on www.health.nsw.gov.au/public-health/ehb/publicatons

The Regulation can also be purchased from NSW Government Information and Sales Centres, and copies of the Guidelines can be also be obtained from the Better Health Centre, Gladesville (98160452).

2. GENERAL

2.1 Different Types Of Testing Techniques

To analyse blood cholesterol and blood glucose levels, a sample of blood is required.

Blood glucose levels can be determined using whole blood, serum or plasma, and blood can be sampled by a number of ways, but is usually carried out by the fingerstick method.

Blood cholesterol can also be determined by testing for total cholesterol, HDL-cholesterol, LDL-cholesterol or triglycerides and again is usually carried out using the fingerstick method.

Each one of these test methods will give a different level of glucose or cholesterol. It is important for people to understand what type of cholesterol or glucose is being tested and to ensure that the interpretations of the results are accurate. All test results should be verified by a Doctor.

2.2 Standard Precautions {tc \11 "Standard Precautions}

Standard precautions are techniques which assume all blood and other body substances are potential sources of infection. This approach is the most effective protective strategy for staff and clients. Standard precautions involve the use of barriers and practices to protect clients and operators from exposure to potentially infectious blood and other body substances.

2.3 Hand Washing and Personal Hygiene

Hands must be washed before and after any blood sampling procedure, and again if the procedure is interrupted.

To wash hands use soap and warm running water, then rinse and dry

However, with some mobile operators of blood glucose and blood cholesterol testing where hot and cold running water is inaccessible for hand washing, an alternative is available. Waterless antiseptic foam, cream or gel hand wash can be used on the hands before and after the procedure and if the procedure is interrupted. If alcohol based hand rubs are used for cleaning hands, a sufficient quantity of cleanser must be used to allow for the entire surface of the hands, fingers and wrists to be cleaned. Hands should be allowed to air dry.

Washing hands or the use of antiseptic foams or gels does not negate the need to wear single use gloves during a procedure.

To protect the operator and the client from micro-organisms, hands must be cleaned:

- . before and after treatment of each client;
- . after contact with any blood or body substance;
- . immediately prior to putting on a new pair of gloves;
- . immediately after removing gloves;
- . after touching the nose or mouth;
- . before and after smoking, eating and drinking;
- . after going to the toilet; and
- . before and after treating wounds or handling soiled wound dressings.

The following is the recommended method to clean hands:

- . wet hands;
- . use soap with warm running water;
- . rub hands vigorously;
- . wash hands all over, including backs of hands, wrists, thumbs and between fingers for 15-20 seconds;
- . rinse hands well; and
- . thoroughly dry hands with a single use paper towel.

Nailbrushes should not be used for scrubbing hands as they may damage the skin.

Operators of blood cholesterol or blood glucose testing equipment should ensure that cuts, wounds or openings in the skin on their hands or any other exposed part of the body, must be covered with a waterproof dressing for protection against infection.

Any person while taking or testing blood cholesterol or blood glucose samples, must not be eating, smoking or drinking and must be appropriately dressed in clean clothing and a clean gown or apron for each procedure.

<p>It is a requirement that any person taking blood samples for blood glucose and blood cholesterol testing wear a clean gown or apron.</p>
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2.4 Gloves

2.4.1 Single Use Gloves

Gloves act as a barrier to micro-organisms. Single use gloves are required to be worn by the operator when blood is sampled for blood glucose or blood cholesterol testing. This will assist in protecting the operator and the client from the potential spread of infection.

Gloves must be replaced if contamination occurs by touching other items during or prior to the procedure.

<p>Single use gloves must never be reused</p>
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Sterilised equipment should never be touched with single use gloves unless the gloves are sterilised. The label and the packaging will indicate if the gloves are pre-sterilised. Using the right techniques should ensure that sterilised items do not have to be handled.

Some people are allergic to latex single use gloves and the powder on these gloves. If a skin penetration operator develops a rash or skin condition it is recommended that they consult a medical doctor. Single use gloves are also made of other materials.

2.4.2 Cleaning Gloves:

General purpose utility gloves, eg. rubber gloves, should be used for:

- . equipment cleaning;
- . decontamination procedures; and
- . handling chemicals.

General purpose utility gloves should be washed in detergent, rinsed and left inverted to dry after each use. Gloves should be inspected before each use and discard if damaged or in a state not able to provide protection. Hands should be washed after using general purpose gloves.

2.5 Skin Preparation

The site where the blood sample is to be taken should be free of infection. The skin should be cleaned with a 70% W/W ethyl alcohol wipe or other suitable disinfectant. The disinfectant on the skin surface must be allowed to dry prior to the blood sample being taken. Other acceptable skin antiseptics include:

Suitable antiseptic solutions include:

- . 80% V/V ethyl alcohol;
- . 70% V/V isopropyl alcohol;
- . alcoholic (isopropyl and ethyl) formulations of 0.5 - 4% W/V chlorhexidine; or
- . aqueous or alcoholic formulations of povidine iodine (1% W/V available iodine).

2.6 Best Practice Recommendations

The following are best practice recommendations for blood cholesterol and blood glucose measurement procedures:

Equipment set up -

- Unopened bags of sterilised equipment should be set up just prior to the procedure to ensure the procedure can be undertaken without interruption. Interruptions increase the chance of transferring micro-organisms.
- When sterilised equipment is set up for use on a client, it should not be removed from its sterile packaging until the procedure is ready to occur.
- All equipment set up for use on a client is assumed to be soiled after the procedure even if the equipment is not used. All equipment must be disposed, or cleaned and sterilised (if required) before re-use.

Treatment of Equipment not Designed to Penetrate the Skin which is Contaminated-

- If equipment that is not designed to penetrate the skin becomes contaminated, it must be thoroughly cleaned prior to being reused. (see section 3). After thoroughly cleaning the equipment it may then be thermally or chemically disinfected as a best practice method.
- Equipment that is designed to only come in contact with intact skin such as a platform must be cleaned and may then be disinfected with 70% alcohol wipe prior to reuse.

Record Keeping -

- In addition to the sterilisation records required to be kept in Section 5 (see 5.5), it is recommended that records be kept of all clients, including the date, time and details of the procedure performed. Names and addresses of clients will allow for easy follow up if required. The operator is under no obligation to ask for the clients name and address, and the client is under no obligation to provide their name or address.
- Mobile operators should also record the site / location of where all procedures were performed.

2.7 Single Use Equipment

Single use pre-sterilised equipment is available for the testing of blood glucose and blood cholesterol. It is recommended in all circumstances that pre-sterilised single use equipment be used.

Fingerstick devices may be entirely single use or they may have both single use and re-useable components. If a platform is used on the finger stick device it must be single use. The platform is not considered a re-usable component.

To minimise the risk of cross infection the following precautions should be taken when using a fingerstick blood-sampling device:

- manufacturer's instructions for the use of the device should be followed;
- reusable parts must be cleaned between each client. Manufacturer's instructions should be observed; and
- single use components shall not be re-used, but disposed into sharps (if sharps) or general waste (if non-sharps) containers.

<p>All used single use equipment must be disposed immediately</p>
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2.8 Protective Eye Wear

It is recommended for people carrying out blood sampling and measurement procedures to wear some form of protective eye wear due to the potential for blood splashes. This will protect the eyes from blood that may be contaminated.

3. CLEANING

Any equipment that comes in contact with the skin but does not penetrate the skin must be cleaned with warm water and detergent before being used again.

If equipment such as the platform accidentally become contaminated with blood it must be cleaned immediately. After cleaning and rinsing, the equipment can be disinfected and left to dry (see section 4 - disinfection and 2.7 - best practice recommendations).

Mobile operators that find this cleaning process difficult, are recommended to use equipment which is all single use.

A good cleaning process includes:

- . moving equipment directly to an area set aside and designed for cleaning;
- . pulling equipment apart and disposing of all non re-useable pieces;
- . immersing the equipment in warm water and detergent to remove visible soil;
- . holding the equipment under the surface of the water and scrubbing carefully with a clean brush;
- . rinsing the equipment with warm to hot water;
- . allowing the equipment to air dry or using a clean lint free cloth; and
- . storing equipment in sealed containers or in a location that ensures it remains clean, dry and dust free.

The premises must be in a clean and hygienic condition at all times during any testing or sampling procedure.

4. **DISINFECTION**

Disinfection will reduce the microbial load on equipment and surfaces but it will not remove all of them. For that reason, all equipment that penetrates the skin must be sterilised and not just disinfected.

Disinfection can be used as an optional best practice technique to help remove micro-organisms. Disinfection will not be effective unless the equipment has been thoroughly cleaned to remove dirt.

<p>Disinfection is not a substitute for cleaning or sterilisation</p>
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If equipment that is not designed to penetrate the skin becomes contaminated, it must be thoroughly cleaned prior to being reused. (see section 3). After thoroughly cleaning the equipment it may then be thermally or chemically disinfected as a best practice method.

Thermal disinfection is the use of heat and water to kill micro-organisms. It is thought to be the best form of disinfection and it is the most recommended method for disinfection of equipment. Effective thermal disinfection temperatures and times are outlined in Australian Standard (AS) 4815:2001 - *'office-based health care facilities - cleaning, disinfection and sterilisation of re-usable medical and surgical instruments and equipment and maintenance of the associated environment'*.

The ability of a chemical disinfectant to work properly will depend on:

- The equipment being cleaned adequately (ie: the amount of dirt present and the number of micro-organisms present)
- Contact time (how long the equipment is in contact with the chemical)
- Temperature (a warmer temperature assist disinfection)
- PH (some chemicals should be used under either acid, alkaline or neutral conditions)
- chemical concentration (the manufacturer will recommend an optimal strength)

A disinfectant is not effective against micro-organisms if it can not reach them.

Where a chemical disinfectant is used, equipment needs to be thoroughly rinsed after cleaning with soap/detergent and water, as the residue can also render disinfectants less effective. Drying the equipment after rinsing is also required so the chemical disinfectant is not diluted.

Some disinfectants may be harmful to human health. Always check the manufacture's "Material Safety Data Sheet" (MSDS) prior to using a chemical disinfectant and always follow manufacturer's instructions for storage, handling, dilution and contact times required.

It is recommended that chemical disinfectants used should be listed in the Australian Register of Therapeutic Goods (ARTG). A chemical disinfectant on the ARTG will have a 'registration certificate' issued by the Therapeutic Goods Administration.

Equipment should not be soaked in solutions of chemical disinfectants, unless specified by the manufacturer's instructions. Chemical disinfectants can have limited contact times and may become ineffective if left for long periods. The more items immersed in the disinfectant the less effective it will be. Fresh disinfectant should be prepared each time items are to be disinfected. The disinfectant should be discarded after use.

5. **STERILISATION**

Any equipment that penetrates the skin must be sterilised.

It is recommended, especially for mobile operators of blood cholesterol and blood glucose testing that single use sterilised lancets are used. This will avoid the need for sterilising equipment to be part of the mobile operation. Alternatively, enough pre-sterilised pen-like, spring-loaded lancets must be available. Equipment that has been used to penetrate the skin must be disposed of immediately after use or must not be used again until it is cleaned and sterilised. Equipment must be stored in its sterile packaging, wrapping or bag until it is ready for use.

Equipment used to penetrate the skin must be sterilised
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The recommended method for sterilisation of equipment is autoclaving. The equipment to be sterilised needs to be checked to determine if it can be processed in an autoclave. Benchtop autoclaves must meet the requirements of AS 2182 - 'Sterilisers - steam - benchtop' and are recommended to be operated in accordance with AS 4815:2001 - '*office-based health care facilities - cleaning, disinfection and sterilisation of re-usable medical and surgical instruments and equipment and maintenance of the associated environment*'. These Standards outline the materials, design and construction, operating cycle, and testing of autoclaves, and their operating requirements.

Sterilisation equipment may be located at the base station of mobile operators however sufficient pre-sterilised fingerprick devices or similar must be available for each client while mobile.

THE FOLLOWING METHODS DO NOT STERILISE EQUIPMENT AND MUST NOT BE USED: boiling, pasteurisation, wiping or soaking with disinfectant, exposure to ultraviolet light, pressure cookers, ultrasonic cleaners, dishwashers and microwave ovens.

5.1 **Record Keeping of Sterilisation**

When sterilising a piece of equipment, documentation of the process **must** be recorded. Where an autoclave is used to sterilise equipment on site the following information must be recorded at the completion of each batch processed:

- time and date;
- the length of time held at maximum pressure and temperature;
- maximum pressure and temperature achieved.

It is recommended that any faults with the cycle be noted and recorded and those items be processed again. The autoclave may also need servicing or calibrating.

It is recommended that the following information also be recorded when sterilising off site :

- faults with cycle (if any);
- the location of premises where sterilisation was completed;
- number of items processed;
- method of sterilisation used; and
- the operator who performed the sterilisation.

This does not apply to equipment that is purchased pre-sterilised.

5.2 Transportation of Sterilised Equipment

All sterilised equipment should be transported in a manner that ensures the sterile items remain sterile. Any items with damaged packaging or that have become damp or moist must be re-sterilised or discarded. All sterile equipment must be used immediately on removal from its packaging or it must be re-sterilised prior to use.

6. WASTE AND SHARPS DISPOSAL

There is a risk of transmitting infectious diseases from person to person through the use and inappropriate disposal of sharps, such as needles and lancets and other clinical waste.

All sharps waste must be disposed of into an Australian Standard approved sharps disposal container or a container that is non-breakable, not capable of being punctured, and has a secure lid that does not allow access to the sharps. The container should be labelled as sharps.

All sharps are to be disposed into a sharps container

Sharps are classed as clinical waste. It is illegal to dispose of clinical waste into the general waste stream. Clinical waste also includes bulk body fluids or blood, and disposable material and equipment visibly soiled with or containing blood. Clinical waste needs to be appropriately treated prior to it being disposed. Contact the EPA, your local council or a waste contractor regarding the requirements of collection and the appropriate method of disposal.

A sharps container should be located in the immediate vicinity of the site where blood samples are taken. Care should be taken to ensure that the sharps container is not accessible to the public especially children. Fingerstick devices should never be reloaded and needles should never be re-sheathed.

All other waste that is not clinical should be disposed of through the normal garbage stream or recycled. Ensure that there is a suitable waste bin for the collection of general waste, and that all rubbish is bagged and disposed of daily.

7. Basic Requirements for Premises

7.1 Work Area

{tc \l3 "Work area}

A work area incorporates the treatment area and includes any workbenches, sinks and other structural items necessary to carry out the skin penetration operation. It is recommended that all work area surfaces be finished in materials in accordance with local council building requirements.

For ease of cleaning, it is recommended that the surfaces within work areas be finished with materials that are rigid, smooth and impervious. Construction should be free from open joints, gaps, cracks, and crevices and kept in good repair.

The work area must be maintained in a clean and hygienic state. For ease of operation the work area should have adequate lighting and should be designed for easy access to equipment.

It is recommended that the procedure or treatment area be separate from the cleaning and waste storage areas. Equipment for cleaning should be moved to the cleaning area immediately after completing a procedure. The storage area should only contain cleaned and processed equipment.

All skin penetration premises must have potable running water available for use.

7.2 Hand Basins {tc \l3 "Handbasins}

A separate hand basin, with running hot and cold water that can be mixed so the temperature reaches a minimum of 40°C must be available. The basin must be supplied with soap or some other suitable hand wash substance, and single use paper towels, single use towelling or hand dryer.

The location of the hand wash basin should be such that it does not provide an opportunity to re-contaminate clean hands through contact with items such as doors, curtains, and the like. It is recommended that the hand wash basin be located within the procedure area.

Hand basins are in addition to and separate from sinks

7.3 S {tc \l3 "Sinks}inks

A cleaning sink supplied with hot and cold water that is capable of reaching a minimum temperature of 40°C is required to be located within the premises for the purpose of cleaning equipment. This sink is in addition to the hand wash basin. Sinks should be deep enough to allow equipment to be scrubbed under water.

If running water is available in mobile vans, a wastewater storage tank is also required. This wastewater must be disposed of to the sewer and not the stormwater or to the street.

References

NHMRC; "Guidelines for Blood Cholesterol Measurement in the Community"

Association of Pharmacy Registering Authorities Inc; "Guidelines for the Measurement of Blood Cholesterol in Pharmacies"

Association of Pharmacy Registering Authorities Inc; "Guidelines for the Measurement of Blood Glucose in Pharmacies"

NSW Health; "Infection Control Policy 99/87"

NHMRC; "Infection Control in Health Care Settings - April 1996"